State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone (505) 476-6000
Fax (505) 476-6030
www.nmenv.state.nm.us

BILL RICHARDSON
GOVERNOR

RON CURRY
SECRETARY

CINDY PADILLA
DEPUTY SECRETARY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

February 19, 2007

David Gregory
Federal Project Director
Los Alamos Site Office
Department of Energy
528 35th Street, Mail Stop A316
Los Alamos, NM 87544

David McInroy
Remediation Services Deputy Project Director
Los Alamos National Laboratory
P.O. Box 1663, Mail Stop M992
Los Alamos, NM 87545

RE: NOTICE OF DISAPPROVAL
SOUTH CANYONS INVESTIGATION WORK PLAN
LOS ALAMOS NATIONAL LABORATORY, NM0890010515
HWB-LANL-06-018

Dear Messrs. Gregory and McInroy:

The New Mexico Environment Department (NMED) has received the Department of Energy and the Los Alamos National Security, LLC's (collectively, the Permittees) document entitled *South Canyons Investigation Work Plan* (Work Plan), dated September 2006 and referenced by LA-UR-06-5979/EP2006-0777. NMED hereby issues this notice of disapproval for the Work Plan. NMED provides the following comments on the aforementioned Work Plan.

General Comment:

1. The Permittees must perform sampling activities at the locations and frequencies described in the approved Interim Facility-Wide Groundwater Monitoring Plan, Revision 1, dated April 2006 and any subsequent updates.

3369

Specific Comments:

1. Sections 2.3.3 Chaquehui Canyon Watershed, 2.3.4 Indio Canyon Watershed, and 2.3.5 Potrillo and Fence Canyons Watersheds, pgs. 6-7:

NMED Comment: The Permittees state that several constituents (inorganics, organics, and radionuclides) were detected above background values. The Permittees must rephrase the last sentence of each section to clearly state that inorganic chemicals and radionuclides were detected above background or fallout values, and that the other listed constituents were detected above detection limits.

2. Section 3.1.3 Surface Water, pg. 9:

NMED Comment: The Permittees recently provided photographic evidence to NMED of dramatic changes observed in Pueblo Canyon as a result of unusually heavy precipitation and subsequent flooding. Large amounts of potentially-contaminated sediment migrated downstream, possibly past the Facility's boundary. The Permittees must discuss in this section any changes observed to the channels and floodplains of the South Canyons as a result of heavy precipitation events and any subsequent flooding. The Permittees must also identify and sample reaches with pre- and post-flooding sediment packages to evaluate potential contaminant migration due to recent precipitation.

3. Section 4.1 Sediment Investigation, pg. 14:

NMED Comment: The Permittees discuss how the data collected from reaches "will allow the investigation team to determine the nature, extent, and sources of contaminants," and will allow the team to "evaluate potential human and ecological risks within and between reaches." NMED is concerned that there are not enough reaches to determine extent (if contamination is detected upgradient) and to determine what contaminants may be leaving the Facility boundary. The Permittees must add the following reaches to the investigation:

- In Fishladder Canyon upgradient of the confluence with Cañon de Valle.
- At the Facility boundary in Fence Canyon.
- At State Road 4 in Potrillo Canyon.
- In the tributary that drains MDA AB into Water Canyon.

4. Section 4.1 Sediment Investigation, pg. 14:

NMED Comment: The sampling plan for the sediment investigation is vague. The Permittees discuss using biased sampling of the geomorphic units to identify contaminants. The Canyons Core Document (which is referenced in this section) discusses using radiological field screening to determine sampling locations. Specifically, this document states "samples will be collected at

locations where the highest radioactivity (or contamination) is measured in the contamination survey. If numerous locations with elevated levels of contamination are found in a reach, the technical team may decide to increase the number of samples collected for full-suite analysis to adequately characterize the nature of contamination."

The sediment investigation in this Work Plan does not address using other field screening methods to determine appropriate sampling locations if radionuclides are not contaminants of concern. The Permittees must discuss the use of other field screening methods as described in Section IX.B.2.d of the Consent Order. The Permittees state in this Work Plan that ten samples are typically collected during an initial phase of a sediment investigation. It is unclear if this is a minimum number of samples expected to be collected from each reach during this investigation, or if the "technical team" will decide to increase the number of samples collected based on a minimum of ten. The Permittees must provide more specific information on sample numbers and decision criteria used to increase or decrease sample numbers. The Permittees must follow the sediment sampling procedures as described in Section IX.B.2.b.iii of the Consent Order.

5. Section 4.1 Sediment Investigation, pgs. 14-15:

NMED Comment: The Permittees propose to use the results of the Phase I sampling task to "characterize the media and, if necessary, to define the limited-suite analyses for subsequent phases of sampling and analysis." The Permittees must provide the Phase I results to NMED for review prior to using them to determine subsequent additional data needs. The Permittees are reminded that contaminants of concern should be determined based on a comparison to background values or detection limits, their expected presence based on site history, and, when contaminants are infrequently detected, their presence in other media.

6. Section 4.3 Groundwater Investigation, Regional Groundwater, pg. 16:

Permittees' Statement: "As indicated in the 'Work Plan for R-Well Rehabilitation and Replacement' (LANL 2006, 92535), R-25 is currently slated for rehabilitation. Furthermore, a letter to NMED dated July 28, 2006 (LANL 2006, 93258), proposed that a final decision on R-25 will be made after the Laboratory has had some experience with the current well rehabilitation project. As of this writing, the well rehabilitation pilot is still underway, so a recommendation for R-25 is not provided in this work plan."

NMED Comment: NMED has responded to the Permittees' letter of July 28, 2006. NMED has also provided the Permittees with its comments on the Permittees' *Well Screen Analysis Report.* The Permittees must refer to these two letters to determine the usefulness of R-25 and all of the monitoring wells discussed in this Work Plan. Also, see general comment #2.

7. Section 5.0 Investigation Methods, pg. 17:

NMED Comment: Per Section IX.A of the Consent Order, the Permittees "shall provide a brief description of investigation, sampling or analytical methods and procedures in documents submitted to the Department that includes sufficient detail to evaluate the quality of the acquired data." The Permittees provided only a brief description of investigation methods for water and sediment collection. The Permittees state that "[a]dditional procedures may be added as necessary to describe and document quality-affecting activities." Many of the standard operating procedures referenced in this Work Plan are procedures that could affect data quality and should have been included. The Permittees must describe all of the methods and procedures that will be used during this investigation.

8. Section 5.1.1.1 Hollow-Stem Auger, pg. 19:

NMED Comment: The Permittees must discuss the situations in which the hollow-stem auger method will be used for drilling. The Permittees must discuss the criteria to be used to determine use of the hollow-stem auger method.

9. Section 5.1.1.2 Air Rotary, pg. 19:

NMED Comment: The Permittees must discuss the situations in which the air rotary method will be used for drilling. The Permittees must discuss the criteria to be used to determine use of the air rotary method.

10. Section 5.1.1.4 Hand Auger, pg. 20:

NMED Comment: The Permittees should avoid using hand augers for collecting samples in tuff. Recently, the Permittees have provided information to NMED to suggest that detections of certain metals in tuff may be due to spalling of metal fragments into the tuff during the use of a hand auger. NMED recommends using a truck-mounted or skid-mounted drill rig for all drilling.

11. Section 5.2.2.1 Collection of Surface Water, pg. 20:

Permittees' Statement: "All surface water samples will be collected and handled in accordance with QP-DO-204 R.0, Spring and Surface Water Sampling."

NMED Comment: The Permittees reference a procedure that is neither described in this Work Plan nor is found on the Permittees website (http://erproject.lanl.gov/documents/procedures /sops/html). The Permittees must describe this procedure.

12. Section 5.2.2.2 Collection of Groundwater, pg. 21:

NMED Comment: The Permittees must collect groundwater samples in accordance with the procedures set forth in Section IX.B.2.i.ii of the Consent Order and the approved Interim Groundwater Monitoring Plan, in addition to the procedure referenced in this paragraph.

13. Table 4.3-1 Comparison of Proposed South Canyons Work Plan Alluvial Wells and Consent Order Wells, pg. 50:

NMED Comment: The WCO alluvial wells were drilled in 1989 during a period of artificially reduced recharge to the alluvium resulting from the collection of water from Water Canyon Gallery (discharges approximately 100 million gallons of water discharged annually). Around 1996, the bypass of water ceased due to an un-repaired break in the collection system. As a result, recharge is now returning to natural conditions and the alluvial wells drilled in 1989 may not be constructed in a manner to intercept alluvial groundwater.

At this time, NMED agrees that WCO-2 does not have to be replaced; however, WCO-1 and 3 must be replaced. When WCO-1 was completed, near saturated conditions were encountered in weathered, possibly reworked, silt and clay-rich Bandelier Tuff. The screened interval in WCO-1 was placed in a silt- and clay-rich zone, instead of overlying and seemingly more permeable gravels, cobbles and boulders. A replacement well set into the underlying weathered tuff and screened primarily in the alluvium is warranted to provide an increased likelihood of intercepting alluvial groundwater, allow collection of more representative groundwater samples, and increase the chance for successful well development.

The Permittees rationale that the construction of WCO-3 meets the requirements outlined in the HSWA Module is not entirely accurate. The HSWA Module requires that the screen "shall not cross any clay layers which may act as aquitards." WCO-3 was completed with a 5-foot screen across the alluvium - basalt interface (2 feet of screen above in the alluvium and 3 feet into the basalt) leaving the interception of any saturation at this location suspect. Because of the construction issue, it may also provide a conduit for contaminant migration through fractures in the basalt unit. A new well must be installed and screened at and above the alluvium - basalt interface.

If conditions are deemed suitable, the Permittees may utilize direct-push technologies to determine the best locations for any replacement well or additional wells required. Once adequate replacements are completed, WCO-1 and WCO-3 must be plugged and abandoned according to section X.D of the Consent Order.

Rather than install 3 alluvial wells down gradient of operational releases to Cañon de Valle, the Permittees shall include provisions to collect periodic surface water samples from three locations in this segment of Cañon de Valle. At least one location shall be below MDA P, one location

between MDA P and Fish Ladder Canyon, and one location between Fish Ladder Canyon and its confluence with Water Canyon. When possible, the sample locations shall remain constant. The Interim Groundwater Monitoring Plan must be updated to include the mandated sampling.

14. Table 4.3-2 Comparison of Proposed South Canyons Work Plan Intermediate Wells and Consent Order Wells, pg. 52:

NMED Comment: The Permittees propose to install well R-27i and to use it to monitor potential intermediate groundwater contamination downgradient of MDA AB. NMED believes that the proposed location for R-27i will not be an appropriate location to monitor releases from MDA AB. NMED believes that regional well R-30 may be used to meet this objective. The Permittees must install R-27(i) adjacent to or upgradient of R-27.

Installation of one intermediate well, R-27(i), shall be completed adjacent to regional well R-27. Drilling activities must also include provisions for the collection of core for contaminant analyses. A drilling plan and schedule for completion must be submitted prior to drilling.

The Permittees must also install one intermediate groundwater well in Water Canyon just below its confluence with Cañon de Valle to identify contamination in intermediate perched groundwater. If contamination is found in intermediate groundwater at this location, NMED may require additional wells to further delineate the extent of contamination. Drilling activities must also include provisions for the collection of core for contaminant analyses. A drilling plan and schedule for completion must be included with the response to this NOD.

15. Table 4.3-3 Comparison of Proposed South Canyons Work Plan Regional Wells and Consent Order Wells, pg. 52:

NMED Comment: The Permittees propose not to install R-24 as a background well for this portion of the Facility and to use R-26 instead. NMED concurs; however, if the Permittees cannot rehabilitate R-26 within the next six months, the Permittees may be required to install R-24. Also, if the well assessment required by the approved *Investigation Report for Intermediate and Regional Groundwater, Consolidated Unit 16-021(c)-99* identifies that R-26 needs to be replaced, the Permittees can use R-24 as a replacement well.

At this time NMED agrees that R-29 does not have to be drilled in lower Water Canyon near its confluence with Potrillo Canyon. However, NMED may require installation of R-29 at the same or different location depending on the results of the groundwater investigation required in the approved work plan.

The final location of regional well R-30 will be determined based on discussions with NMED. Drilling activities must also include provisions for the collection of core for contaminant analyses. A drilling plan and schedule for completion must be prior to drilling.

16. South Canyons Historical Investigation Report:

NMED Comment: In sections 4.1.2.1, 5.1.1.1, and 9.1.1.2, the Permittees state that geomorphic mapping and reach sampling were performed in Cañon de Valle, S-Site Canyon, and North and South Ancho Canyons. However, the Permittees are proposing in their Work Plan to prepare detailed geomorphic maps as an initial step in characterizing sediments. It appears this initial step has already been performed for the aforementioned canyons. The Permittees must provide the geomorphic maps for these canyons as part of this Work Plan or provide rationale for not doing so.

The Permittees must submit responses to the comments in this letter within 30 days of receipt of this letter. Once the responses to the comments are approved, the Permittees must submit a revised work plan that comports with the comments herein and the NMED-approved responses to the comments. NMED will notify the Permittees of a submittal date for the revised work plan as part of its approval of the responses to comments. As part of the letter that accompanies the revised work plan, the Permittees must include a table that details where all revisions have been made to the Work Plan and cross-references NMED's numbered comments. All submittals must be in the form of two paper copies and one electronic copy in accordance with Section XI.A of the Order on Consent. Should you have any questions, please feel free to contact Darlene Goering of my staff at (505) 476-6042.

Sincerely,

James Bearzi
Chief
Hazardous Waste Bureau

JPB:dxg

cc: D. Goering, NMED HWB
S. Yanicak, NMED DOE OB, MS J993
L. King, EPA 6PD-N
G. Rael, DOE LASO, MS A316
A. Phelps, LANL MS M591
file: Reading and LANL TA-0 '06